ASSIGNMENT 2

Textbook Assignment: "Engineering Fundamentals," chapter 2, pages 2-1 through 2-20, and "Basic Steam Cycle," chapter 3, pages 3-1 through 3-6.

2-1. Matter is defined as anything that occupies space and has

1. color
2. weight
3. motion
4. electrical energy

2-2. Which of the following substances CANNOT be reduced to a simpler substance by chemical means?

1. An element
2. A compound
3. A gas
4. A molecule

2-3. When two or more elements are chemically combined, what is the resulting substance called?

1. An atom
2. A solid
3. A mixture
4. A compound

2-4. A combination of elements and compounds that are not chemically combined and can be separated by physical means is known as a

1. compound
2. molecule
3. mixture
4. gas

2-5. A molecule is a chemical combination of which of the following parts?

1. Two or more atoms
2. Two or more compounds
3. A liquid and a solid
4. An element and a compound

2-6. The smallest particle of an element that retains the characteristic of that element is known by what term?

1. A compound
2. A molecule
3. A mixture
4. An atom

2-7. The electron and proton each have the same quantity of charge, although the mass of the proton is about how many times that of the electron?

1. 1028
2. 1500
3. 1837
4. 3000

2-8. An atom of hydrogen, which contains one proton and one electron, has what atomic number?

1. One
2. Two
3. Three
4. Four

2-9. Which of the following equipment use(s) magnetic tape?

1. Computers
2. Tape recorders
3. Video reproduction equipment
4. All of the above

2-10. Electric motors use magnets to convert mechanical energy into what other type of energy?

1. Heat energy
2. Solar energy
3. Electrical energy
4. Chemical energy

2-11. Which of the following materials is magnetic?

1. Cobalt
2. Tin
3. Glass
4. Wood

2-12. On the Fahrenheit scale, what is the boiling point of pure water?

1. 32°F
2. 100°F
3. 102°F
4. 212°F

2-13. On the Celsius scale, what is the freezing point of pure water?

1. 0°C
2. 32°C
3. 100°C
4. 212°C

2-14. What Celsius temperature is equivalent to 212°F?

1. 32°C
2. 100°C
3. 180°C
4. 212°C

2-15. On the Celsius scale, what is absolute zero?

1. -100°C
2. -212°C
3. -213°C
4. -300°C

2-16. What type of pressure is actually shown on the dial of a gauge that registers pressure relative to atmospheric pressure?

1. Absolute pressure
2. Barometric pressure
3. Atmospheric pressure
4. Gauge pressure

2-17. At sea level, what is the average atmospheric pressure in inches of mercury?

1. 29.92 in.Hg
2. 30.00 in.Hg
3. 39.92 in.Hg
4. 40.12 in.Hg

2-18. What term is used to describe the actual atmospheric pressure that exists at any given moment?

1. Absolute pressure
2. Positive pressure
3. Gauge pressure
4. Barometric pressure

2-19. Which of the following vacuum gauge readings would indicate a nearly perfect vacuum?

1. 28.92 in.Hg
2. 29.92 in.Hg
3. 30.00 in.Hg
4. 31.92 in.Hg

2-20. What is absolute pressure?

1. Atmospheric pressure minus gauge pressure
2. Atmospheric pressure plus gauge pressure
3. Absolute pressure plus vacuum
4. Gauge pressure plus vacuum

2-21. A gauge pressure of 300 psig equals approximately what absolute pressure?

1. 314.7 psia
2. 324.7 psia
3. 330.7 psia
4. 344.7 psia

2-22. What term refers to the property of a metal that allows It to shatter easily?

1. Toughness
2. Brittleness
3. Strength
4. Hardness

2-23. What term refers to the property of a metal that will NOT permit it to tear or shear easily?

1. Toughness
2. Brittleness
3. Strength
4. Hardness

2-24. What term refers to the ability of a metal to stretch or bend without breaking?

1. Toughness
2. Brittleness
3. Strength
4. Ductility

2-25. What term refers to the ability of a metal to maintain heavy loads without breaking?

1. Toughness
2. Strength
3. Hardness
4. Ductility

2-26. What term refers to the property of a metal that allows it to be rolled, forged, hammered, or shaped without cracking or breaking?

1. Malleability
2. Ductility
3. Strength
4. Toughness

2-27. Metals and alloys are divided into which of the following general classes?

1. Light and heavy
2. Hard and soft
3. Smooth and rough
4. Ferrous and nonferrous

2-28. What are the two systems used by the Navy to identify metals?

1. The color marking system and the weight system
2. The numbering system and the weight system
3. The continuous identification marking system and the color marking system
4. The continuous identification marking system and the weight system

2-29. Which of the following references contains information on the metals used aboard ship, their properties, and their identification systems?

1. NAVEDTRA 10571-1
2. NAVEDTRA 12061
3. NAVEDTRA 10792-E
4. NAVEDTRA 10925

2-30. Electricity is a combination of a force called voltage and the movement of invisible particles known as

1. resistance
2. friction
3. mass
4. current

2-31. In reference to current, which of the following statements is NOT true?

1. Current is the movement of invisible particles
2. Current causes electrical devices to operate
3. Current cannot be seen
4. Current can flow out of a broken wire

2-32. Ohm’s law is stated as I = E/R, What does I refer to?

1. Voltage in volts
2. Current in amperes
3. Resistance in ohms
4. Pressure in pounds

2-33. Who is the formulator of the basic laws of modern philosophy concerning gravity and motion?

1. Sir Isaac Newton
2. Blaise Pascal
3. George Simon Ohm
4. Jacques Bernoulli

2-34. What does Newton’s third law state?

1. For every action there is an equal and opposite reaction
2. An imbalance of force on a body tends to produce an acceleration in the direction of force
3. A body in motion tends to remain in motion
4. Work is done when an object is moved through a distance against a resisting force

2-35. What term refers to the rate at which velocity increases?

1. Speed
2. Inertia
3. Acceleration
4. Potential energy

2-36. Frictional forces can cause which of the following problems?

1. Waste power
2. Create heat
3. Cause wear
4. All of the above

2-37. Mechanical energy in transition is called

1. heat
2. work
3. motion
4. potential energy

2-38. A sled that is being held at the top of an icy hill has what form of energy?

1. Mechanical potential energy
2. Chemical energy
3. Thermal energy
4. Mechanical kinetic energy

2-39. Which of the following formulas is used to calculate work?

1 . P E = W X D
2 . I = E/R
3 . W = F X D
4 . F = W X D

2-40. In reference to energy, which of the following statements is true?

1. Energy can be destroyed
2. Energy can be created
3. Energy can be transformed
4. The total amount of energy input does not always equal the total amount of energy output

2-41. Steam hotter than the boiling temperature of water is known by which of the following terms?

1. Wet steam
2. Superheated steam
3. Saturated steam
4. Latent heat of fusion

2-42. Thermal energy in transition is called

1. work
2. motion
3. potential energy
4. heat

2-43. What does 32°F equal in Celsius?

1. 0°C
2. 20°C
3. 30°C
4. 32°C

2-44. When the mercury level is at the +10° mark on the Celsius thermometer, it will be at what mark on the Fahrenheit thermometer?

1. +50°
2. +20°
3. +30°
4. +40°

2-45. Whose law, simply stated, is interpreted as pressure exerted at any point upon an enclosed liquid is transmitted undiminished in all directions?

1. Charles's law
2. Pascal's law
3. Boyle's law
4. Newton's law

2-46. What branch of mechanics deals with the mechanical properties of gases?

1. Hydraulics
2. Thermal flow
3. Pneumatics
4. Mechanical potential energy

2-41. What are the four areas of operation in a main steam system?

1. Generation, expansion, condensation, and feed
2. Expansion, condensation, power, and exhaust
3. Generation, expansion, rotation, and feed
4. Condensation, expansion, feed, and pressure

2-48. By the process of combustion in a boiler furnace, the chemical energy stored in the fuel oil is transformed into what other type of energy?

1. Mechanical energy
2. Electrical energy
3. Steam energy
4. Thermal energy

2-49. In the basic steam cycle, when steam enters the turbines and expands, the thermal energy of the steam converts to what other type of energy?

1. Steam energy
2. Mechanical energy
3. Electrical energy
4. Potential energy

2-50. The temperature at which a liquid boils under a given pressure is known by which of the following terms?

1. Saturation pressure
2. Equilibrium contact
3. Saturation temperature
4. Critical point

2-51. The amount by which the temperature of superheated steam exceeds the temperature of saturated steam at the same pressure is known by which of the following terms?

1. Degree of saturated vapor
2. Degree of superheat
3. Degree of saturated pressure
4. Degree of expansion

2-52. As the steam leaves or exhausts from the LP turbine, what system does it enter?

1. The auxiliary exhaust system
2. The condensate system
3. The HP turbine system
4. The main steam system

2-53. The main condenser, the main condensate pump, the main air ejector condenser, and the top half of the DFT are components of what system?

1. The HP turbine system
2. The LP turbine system
3. The condensate system
4. The auxiliary steam system

2-54. The main condenser receives steam from the

1. LP turbine
2. HP turbine
3. main feed pump
4. economizer

2-55. The main feed pump receives the water (delivered from the booster pump) and discharges it into what system?

1. The condensate system
2. The saturated steam system
3. The auxiliary steam system
4. The main feed piping system

2-56. The temperature at which a boiling liquid and its vapors may exist in equilibrium contact depends on which of the following factors?

1. The pressure under which the process takes place
2. The time of day the process takes place
3. The type of container used to hold the boiling liquid
4. The percent of humidity in the air

2-57. Naval boilers produce which of the following types of steam?

1. Saturated steam
2. Superheated steam
3. Both 1 and 2 above
4. Contaminated steam

2-58. The economizer is positioned on a boiler to perform what basic function?

1. It acts as a cooler
2. It reverses the flow of water
3. It acts as a preheater
4. It converts the HP steam into LP steam

2-59. The expansion area of the main steam system is that part of the basic steam cycle in which steam from the boilers to the main turbines is

1. expanded
2. cooled
3. reversed in direction
4. condensed

2-60. The DFT serves which of the following functions?

1. It removes dissolved oxygen and noncondensable gases from the condensate
2. It preheats the water
3. It acts as a reservoir to store feedwater to take care of fluctuations in feedwater demand or condensate supply
4. All of the above